HIV DISEASE AS A CAUSE OF DEATH FOR AFRICAN AMERICANS IN 1987 AND 1990

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Using death certificate data for 1987 and 1988 from the National Center for Health Statistics, combined with human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) surveillance data through December 1990 from the Centers for Disease Control, this article reports ranked mortality causes as a measure of the impact of the HIV epidemic within the African-American community. In 1987, while HIV/AIDS ranked 15th as a cause of death for all Americans, for African Americans the disease ranked 10th overall (third for African-American men, fifth for African-American women between 25 and 34 years of age, and ninth for African-American children ages 0 to 14). By 1990, it can be estimated that for all Americans HIV disease was the eighth leading cause of death, but for African-Americans it ranked sixth overall. For African-American men between the ages of 35 and 44, HIV disease became the leading cause of death, accounting for 23.5% of all deaths. This disease was the second leading cause of death for African-American men and women between the ages of 25 and 35, and the eighth leading cause of death for African-American children ages 0 to 14. The implications of these findings are discussed. (*J Natl Med Assoc.* 1992;84:481-487.)

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African Americans have long suffered disproportionate mortality with causes ranging from perinatal conditions for infants through accidents and homicide in the young adult to cardiovascular disease and cancer in the middle-aged and elderly. Inadequate community-based disease prevention resources, culturally inaccessible health education materials and methods, and unaffordable or unavailable health-care services have each contributed to the poor health status of African Americans as have unhealthy personal behaviors such as smoking, interpersonal violence, and illicit drug use.

To this health-threatening environment has now been added the effects of human immunodeficiency virus (HIV) infection. Some focus has been given to reported acquired immunodeficiency syndrome (AIDS) cases,[1] HIV seroprevalence,[1-3] and the epidemiology of risk factors[4] in American racial and ethnic populations, and to mortality impact for African-American women.[5] For some purposes, it is useful to make comparisons between geographic, socioeconomic class, gender, or racial/ethnic groups. In allocating scarce prevention resources, it is useful to know that some transmission-permissive behaviors are more prevalent among African-American women in Washington, DC and others are more common among European-American men in San Francisco. However, for other purposes, it is more useful to look within specific populations, without regard for comparisons to other groups. To understand the present status of HIV disease in the African-American community, it is not necessary to know whether each factor considered is better or worse for

TABLE 1. HIV / AIDS DEATHS IN 1987*

	CDC Surveillance Reports (AIDS Only)	NCHS Vital Statistics Reports	
		All HIV Disease	AIDS Only
Black men	3351	3247	1515
Black women	715	673	355
Black children†	121	120	61
All blacks	4187	4040	1931
All Americans	14 646	13 468	5552

*Data were taken from references 6, 8, and 9.
†Ages 0 to 14.

European Americans, Latinos, Native Americans, or Asian Americans. This article focuses on ranked mortality causes as a measure of the impact of the HIV epidemic within the African-American community.

METHODS

1987 Deaths From HIV Disease and Competing Causes

Beginning in 1987, the National Center for Health Statistics (NCHS) began to use a separate International Classification of Diseases (ICD) code for HIV disease. This has allowed analysis of the contribution of HIV-related causes to deaths, as listed on death certificates reported to the NCHS from all 50 states and the District of Columbia. For this study, by age and gender, HIV-related deaths among African Americans were compared with deaths in African Americans that were attributed to conditions reported in the NCHS "List of Deaths From 72 Select Causes."[6] This comparison was then made for deaths among all African Americans and among all Americans.

1990 Ranks

Ranks for 1990 were estimated by comparing 1990 AIDS deaths among African Americans reported to the Centers for Disease Control (CDC) with non-HIV deaths from 1988 NCHS data.[7]

1990 Estimated HIV Deaths. National Center for Health Statistics death certificate data for 1990, which specifies HIV deaths by race, age, and gender, will not be published until 1993. However, it was noted that for African Americans, 1987 AIDS deaths reported to the CDC were nearly identical in number to HIV-caused deaths reported by the NCHS for that year (Table 1), although the sources of bias for the two systems are thought to be different.

The CDC publishes the number of AIDS patients whose deaths were reported to occur in a given year. The NCHS reports the number of death certificates that listed AIDS as one contributing cause of death and for which their algorithms select it as the underlying cause. It could be expected that NCHS data would yield higher numbers of HIV-related deaths than CDC surveillance data because the NCHS category used to rank causes, "Deaths From Human Immunodeficiency Virus Infection," includes deaths attributed to AIDS and deaths attributed to other categories of HIV infection. In 1987, NCHS data recorded approximately 50% the number of AIDS deaths as the CDC surveillance system. With the addition of HIV-related, non-AIDS deaths, for purposes of ranking causes of death, the total number of NCHS deaths attributed to HIV infection do not differ significantly from AIDS deaths reported by the CDC.

There is a significant delay in reporting AIDS cases to the CDC, but less so for mortality figures than for AIDS cases diagnosed. Because of this reporting delay, the CDC does not publish (by age in years, race, and gender) total numbers of deaths or diagnosed AIDS cases for the previous year. Thus, when this article was being written in 1991, it was necessary to apply a subtraction method to the data as reported in order to estimate the deaths that occurred in 1990.

Cumulative deaths and AIDS cases (by age in years, race, and gender) reported through December 1989[8] were subtracted from cumulative figures reported through December 1990.[9] The remainder served as an estimate of the number of reported AIDS deaths that occurred and the number of AIDS diagnoses that were reported during the 1990 calendar year (Tables 2 and 3).

Validation of Estimation Procedures. The validity of this estimation process was tested for 1989 data. Cumulative figures reported through December 1988[10] were subtracted from those reported through December 1989[8] to obtain an interval estimate for the 1989 calendar year. These estimates of AIDS cases diagnosed and AIDS deaths were compared to the corresponding 1989 figures published in January 1991 by the CDC.

Estimated AIDS cases. The AIDS case reports increased an average of 30% for adults and more than doubled for children, probably as a consequence of additional reports of cases diagnosed in 1989 that were reported to the surveillance system throughout 1990. In fact, this late reporting can be seen to continue into a second year. The comparison of 1988 AIDS cases as reported in 1991[9] increased an average of 7.6% over the 1988 number reported in 1990.[8] Because of this poor validity for estimates of recent annual AIDS cases, it

TABLE 2. ESTIMATION AND VALIDATION OF DATA FOR AIDS DEATHS IN 1989*

	Cumulative Through 12/89†	Cumulative Through 12/88‡	Estimated 1989	Reported 1989§	% Change
Adults	69 225	45 399	23 826	24 032	+0.8%
Children	1088	735	353	317	−11.0%
Total	**70 313**	**46 134**	**24 179**	**24 349**	**+0.7%**

*The cumulative figures through 12/88 were subtracted from the cumulative figures through 12/89 to obtain the estimated 1989 figures.
†Data were taken from reference 8.
‡Data were taken from reference 10.
§Data were taken from reference 9.

TABLE 3. ESTIMATION AND VALIDATION OF DATA FOR AIDS DEATHS IN 1990*

	Cumulative Through 12/90†	Cumulative Through 12/89‡	Estimated 1990
African-American men	22 909	15 841	7068
African-American women	4932	3235	1697
African-American children	735	545	190
All African Americans	28 576	19 621	8955
All Americans	100 313	70 313	30 500

*The cumulative figures through 12/89 were subtracted from the cumulative figures through 12/90 to obtain the estimated 1990 figures.
†Data were taken from reference 9.
‡Data were taken from reference 8.

was not possible to make useful statements about exposure categories or AIDS case incidence among African Americans on an annual reporting basis.

Estimated AIDS deaths. AIDS deaths for 1989 tested by the same process resulted in less than a 1% increase in reported deaths over deaths estimated by subtraction of year-end figures. This level of validity allowed estimation of 1990 AIDS deaths by age and gender for African Americans.

1990 estimated deaths from competing causes. The numbers for deaths attributed to other top-ranking causes for African-Americans did not change significantly between 1987 and 1988 (the last year for which the NCHS has published data). In light of this apparent short-term stability, 1988[7] figures were used as estimates of 1990 deaths from competing causes.

RESULTS

1987

All African Americans. Since its recognition in 1981, the rapid rise of HIV disease through the ranks as a cause of death has been alarming. It has been widely reported that HIV disease became the 15th leading cause of death for all Americans in 1987. However, for African Americans, it was by then the 10th leading cause of death, accounting for 1.6% of all deaths in 1987 (Table 4).

The distribution across age and gender groups was expectedly uneven. Among African-American adults, the mortality impact was greater than for children, and except for the 15-to-24 age group, the mortality impact was greater for men than for women.

African-American Children. For African-American children under the age of 15, HIV disease accounted for only 0.8% of deaths in 1987 and ranked ninth as a cause of death, just behind septicemia, with about half the number of deaths occurring from malignant neoplasms.

African-American Men. In 1987, 13.3% of all deaths in African-American men between the ages of 25 and 34 were caused by HIV disease, ranking it third behind homicides and accidents. Between the ages of 35 and 44, the impact of HIV infection decreased only slightly to 10.4% of deaths, ranking HIV fourth among competing causes (after heart disease, homicide, and accidents).

African-American Women. The mortality effect for African-American women was skewed toward

TABLE 4. HIV DISEASE AS A CAUSE OF DEATH IN 1987*

Age	Rank†	% Deaths‡
Black Children		
0 to 4	8	0.8
5 to 14	10§	0.8
0 to 14	9	0.8
Black Women		
15 to 24	6	2.0
25 to 34	5	8.0
35 to 44	7	3.7
45 to 54	12	0.5
Black Men		
15 to 24	6	2.6
25 to 34	3	13.3
35 to 44	4	10.4
45 to 54	7	2.8
All Black Americans		
All ages	10	1.6
All Americans		
All ages	15	0.6

*Data taken from reference 6.
†Rank = rank of HIV against competing causes of death in age/race/gender category based on number of deaths.
‡% Deaths = percentage of all deaths in age/race/gender category attributed to HIV disease for all 50 states plus the District of Columbia.
§Rank tied with cerebrovascular causes.

somewhat younger ages than for men, although the highest concentration (8%) of HIV-related deaths in women also was found between the ages of 25 and 34 where, ranking HIV as the fifth leading cause behind homicides, accidents, malignant neoplasms, and heart diseases.

1990

Recognizing that the numbers used for HIV deaths in 1990 are underestimates, the impact of HIV deaths (estimated at 8955) on African-American mortality is ominous (Table 5). For all Americans, deaths from HIV disease (estimated at 30 500) had risen from 15th to eighth in rank, accounting for 1.4% of all deaths in 1990. This ranking just surpassed that for deaths from suicide and reached a magnitude of about 75% that of deaths due to diabetes, which was the seventh ranked cause.

All African Americans. For all African Americans, HIV is estimated to have caused 3.4% of deaths and to rank sixth behind heart disease, malignant neoplasms, cerebrovascular disease, accidents, and homicides. Human immunodeficiency virus-related deaths exceeded those from pneumonia/influenza, diabetes, and perinatal conditions. The impact on African-American children increased much less from 1987 to 1990 than for adults. In all adult age groups and both genders, steep increases occurred in both the percentage of deaths accounted for by HIV infection and its rank as a cause of death.

African-American Children. Although HIV deaths increased 58% from 120 (0.8% of deaths in African-American children) in 1987 to an estimated 190 (1.2%) in 1990, it moved up only one position in rank, from ninth to eighth, overtaking septicemia as a cause of death.

African-American Men. In 1990, for men between the ages of 35 and 44, HIV disease became the leading cause of death. At an estimated 2968 fatalities, HIV-related deaths accounted for nearly a quarter of all deaths in this age/gender group and exceeded the number of deaths caused by heart disease (1961), accidents (1551), and homicides (1375). At 23.7% of deaths in men between the ages of 25 and 34, estimated HIV deaths (2518) ranked second, not far behind homicide (2827) deaths, and exceeded those caused by accidents (1920). For younger men ages 15 to 24 and older men ages 45 to 54, HIV disease ranked fourth as a cause of death representing significant but more modest rises in both rank and percentage of deaths.

African-American Women. While not equaling the levels of mortality impact seen among African-American men, HIV deaths more than doubled for each age group among African-American women. For women ages 25 to 34, HIV disease became the second leading cause of death. At an estimated 707 deaths (15.6% of deaths), HIV mortality was exceeded by homicides (740) and passed the number of deaths caused by accidents (610) and malignant neoplasms (509). The estimated 658 deaths in African-American women ages 35 to 44 ranked HIV disease as the third cause of death among this age group, behind malignant neoplasms (1476) and heart disease (1053) but ahead of accidents (470) and cerebrovascular disease (384). Increases from 1987 to 1990 moved HIV-related deaths to fifth rank for African-American women ages 15 to 24 and seventh for those ages 45 to 54.

DISCUSSION

Many contributory factors have been identified that

explain why HIV deaths are high and rising among African Americans. These factors include:

- a short survival time between diagnosis of AIDS and death, and a high percentage of patients seeking care late in the course of the disease,[11,12]
- the high transmission rates and seroprevalence of HIV infection in several population sectors[1-3] such as military recruits, childbearing women, STD patients, TB patients, and illicit drug users,
- their low access to and retention in clinical trials,
- financial, operational, and situational obstacles to early intervention therapies, and
- the high prevalence of behaviors that permit HIV transmission.

The tremendous impact of HIV disease on the mortality of African Americans indicates that it is urgent for work to intensify and expand on both treatment and prevention methods for this population.

Setting Priorities

As the rate of new funding for HIV disease slows markedly, questions of distribution become crucial. If relying on the number of cases alone, the majority population of European Americans would always have priority. A small percentage of a large number is still a large number. It will be critical to consider also the proportional impact of HIV disease in discrete populations. The allocation of resources to combat HIV infection should not be primarily about the politics of social inclusion but about the politics of access to means of personal and community survival.[13] This is not to argue for an absolute priority for African Americans. A Native-American tribe whose total membership is 2000 could be facing extinction with the percentage mortality impact demonstrated for African Americans in this article. It is instead to argue that, for both health-care services and research funding, an information-driven process of resource allocation must prevail over a primarily political one. A rationally competitive process should determine research priorities (including sites, questions, and subjects) and health-care financing decisions, as well as prevention targets and strategies.

Men as a Priority. The extreme impact of this disease on African-American men argues for placing them at highest priority. Their rates of HIV infection and death are higher than those of women and much higher than those of children (although obviously the years of life lost are less). The majority of AIDS cases among African-American males are secondary to male homosexual/bisexual contact, and yet repeatedly, studies of gay men include too few minority subjects to provide important information about their social support, health-care, and HIV/AIDS prevention needs.

TABLE 5. HIV DISEASE AS A CAUSE OF DEATH IN 1990 (ESTIMATED)*

Age	Rank†	% Deaths‡
Black Children		
0 to 14	8	1.2
Black Women		
15 to 24	5	4.2
25 to 34	2	15.6
35 to 44	3	10.3
45 to 54	7	1.7
Black Men		
15 to 24	4	3.6
25 to 34	2	23.7
35 to 44	1	23.5
45 to 54	4	6.4
All Black Americans		
All ages	6	3.4
All Americans		
All ages	8	1.4

*Data taken from references 7-9.
†Rank = rank of HIV against competing causes of death in age/race/gender category based on number of deaths.
‡% Deaths = percentage of all deaths in age/race/gender category attributed to HIV disease for all 50 states plus the District of Columbia.

While African-American women are also greatly affected, the maternal and child health system, combined with women's health advocacy, in the past few years have brought into focus issues related to perinatal transmission, adolescent risk, and the nature of HIV infection as a "family" disease. Family for these purposes has been indirectly defined as a child, its mother, and its siblings. However, African-American men are integral parts of families, even when not as the head of household. Inclusion of men in the analysis of the network designated "family" leads to the consideration of several important questions that will assist in designing appropriate and effective programs for men, many of which will also benefit the women and children in men's lives.

For instance, how do African-American men support each other, in general and in the face of HIV infection?

What is the actual or potential support provided to women by male friends and spouses, to mothers and children by fathers, stepfathers, uncles, paternal grandparents? How can reproductive counseling of infected and at-risk men best be structured, and what is the impact likely to be? Do we know, for example, about the determinants and strength of HIV-infected African-American men's desire to father children? What is the average number of children fathered by at-risk or infected men (sometimes by two or more women)? These questions about men have particular implications for women and children since decreasing HIV infection rates among men will decrease the risk of infection for women as sexual partners and, therefore, for the children of infected parents.

Drug Use as a Priority. Based on available data for the African-American community, treatment of illicit drug use and decreasing behaviors in drug users that permit HIV transmission also should be an urgent priority. Treatment strategies and facilities need to be developed and expanded rapidly. In this area, women would seem a higher priority than men, both because information about and services for women lag so far behind the admittedly meager resources available to men and because, for women, intravenous drug use is the most frequent source of exposure to HIV.

Clinical Research as a Priority. The recent discussion of the effectiveness of AZT in African-American men[14] has drawn attention to the importance of assessing drug therapy for HIV infection in ways that allow the early identification of differential effects in gender, age, and race subpopulations. Other unpublished work has raised questions about whether markers for disease progression differ by race as well as by HIV exposure category. The impact of HIV disease on African Americans is of sufficient magnitude that it is not ethically supportable to leave questions of natural history, clinical measurement, and treatment effectiveness in racial and ethnic groups as a secondary issue.

A Veterans Affairs study demonstrates that it remains difficult for general population studies to accrue and retain sufficient numbers of minority subjects to address possible race, ethnicity, and gender differences effectively.[15,16] This problem is not unique to HIV-related research but has continued to plague studies in many health areas such as cancer and cardiovascular disease. As is now being done for women and has been done for European-American gay men, multicenter cohorts should be funded and organized to address a range of behavioral and clinical questions about the natural history, treatment, and prevention of HIV disease in African Americans (as well as in Latinos and Native Americans).

Given the distrust of European-American researchers engendered in minority populations by a complicated history, senior minority researchers should be recruited to develop and manage such studies in collaboration with majority researchers experienced in working with minority colleagues and populations. Such minority-focused studies could serve to train more junior minority researchers and improve minority community access to culturally sensitive interventions. These studies would also facilitate the development or modification of biologic measures and psychosocial instruments whose content and language would be appropriate for specific minority populations. Such minority-specific survey tools would be validated for these populations and help establish appropriate norms for minorities.

CONCLUSION

The leading causes of death for African Americans are not treatable or preventable with relatively simple interventions such as immunizations or antibiotics. Human immunodeficiency virus disease, like cardiovascular disease, infant mortality, and homicide, occurs through an interaction of behavioral, biological, and societal factors. Unlike the other conditions, HIV disease is infectious and epidemically increasing the morbidity and mortality of African Americans. The survival of individuals and the social as well as biological health of African Americans depend on an intensified commitment to the development and effective delivery of sustainable interventions that are proven to reduce HIV transmission, disease progression, and mortality in this population.

Note

Mortality data for 1991, estimated by the procedure outlined in this article, would now rank AIDS deaths as the leading cause of death for African-American women between the ages of 25 and 34, behind homicide. It is likely that HIV/AIDS mortality is higher in African Americans than these estimates indicate because of misclassification of race,[17] higher rates of non-reported AIDS cases for African Americans,[17,18] and deaths from HIV disease but without an AIDS-defining condition.

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